

**Department of Information Systems
London School of Economics and Political Science**



Working Paper Series

138

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February 2006

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Michel Foucault in the Social Study of ICTs: Critique and Reappraisal

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Abstract

Despite the considerable cross-disciplinary influence of Foucault's work, he is, the paper argues, unjustly neglected in the study of information and communication technologies (ICTs), especially in the Information Systems field (IS). The paper argues for the abiding relevance of Foucault's oeuvre. His thinking on techne and technology is reviewed, and a critique of his relative neglect in the IS 'discipline' provided. The paper then critically evaluates and illustrates how he can and has been used in the study of ICTs in IS, organization, management and surveillance studies, and more recently by those studying network society, techno-bodies and cyberspace. The paper concludes by pointing to the potential for utilising Foucault in deconstructing the growing interest in ICT-supported knowledge management and related systems and understanding control in liquid modernity.

Introduction

Given Foucault's massive influence across so many other diverse disciplines and areas of intellectual endeavour, it is surprising to find Foucauldian methods and concepts discussed so little, let alone digested and used in the Information Systems field¹. However, there are also many academics who work on information and communication technology (ICT) related issues from adjacent or associated perspectives, and sometimes consciously connect with the IS community. These include researchers in organization studies (e.g. Burrell, 1998; Clegg, 1998); sociology (e.g. Bauman, 1999; Lyon, 1993); cultural studies (e.g. Haraway, 1991; Hayles, 1999); philosophy of technology (e.g. Dreyfus, 2003; Feenberg, 2002; Introna, 1997), innovation studies (Bloomfield et al., 1997; Grint and Willcocks, 1995); strategic management (McKinley and Starkey, 1998; Knights and Murray, 1994), and critical accounting (e.g. Morgan and Willmott, 1993). Foucault has been much more influential amongst these latter groupings.

In this paper we will assess Foucault's views of techne and technology and why the relative neglect of his work in the IS field. We pinpoint this as ironic given that the celebrated ICT study by Zuboff (1998) is so influenced by Foucault, but explain the neglect through a brief genealogy of the IS 'discipline'. We argue that IS attempts to discipline itself could learn from a deeper Foucauldian genealogy, as attempted in part by Introna (2001). The paper then illustrates where Foucauldian perspectives, concepts and

¹ 'Information Systems' here refers to those academics, researchers, teachers, students, and indeed practitioners who gravitate around conferences such as ICIS, ECIS, HICSS, PACIS, ACIS tend to be members of the Association For Information Systems or related/similar bodies, write research papers and books consciously within an IS 'discipline', and publish in a self-defined group of 'IS' journals that may be global, regional or national in stretch..

methods have been applied; and with what results. This section particularly illustrates effective applications of Foucauldian perspectives on ICTs in IS, organization, management and surveillance studies. The final section argues against the view that Foucault has become less relevant with moves to liquid modernity (Bauman, 1999) network society (Munro, 2000) and new forms of technology and techno-bodies (Best and Kellner, 2001). Instead we argue that Foucault's work has an abiding importance, and can become even more relevant to the study of ICTs.

The paper assumes a degree of familiarity with Foucault's main work, but not with its application to ICTs. Before we begin it is important to stress the provisionality of Foucault's ideas and the fact that Foucault himself was far from being a systematic thinker. He quite deliberately described his practices as 'analytical work' rather than theory, and his analysis of power relations as 'not a theory, but rather a way of theorizing practice' (Kritzman, 1988). Somewhere Foucault refers to Nietzsche's observation that while thinkers are always shooting arrows into the air, the key thing is for others to pick them up and shoot them in another direction. If the unfinished, open-ended character of his work creates some difficulties for its reception and use, then it also leaves open the possibility of creative applications of his ideas. We must recognise throughout that Foucault himself would expect from others a development, not mere replication of his work.

Foucault: Techne and Technology

Foucault himself wrote little directly about information and communications technologies (ICT), and indeed little about technological artefacts and tools, though he recognised that the technologies he was interested in were physical in part, for example in the architecture of prisons, schools, the clinic. However, he did write much about procedures, techniques, processes and behavioural/disciplinary technologies, for example the confession, the examination, prison rehabilitation regimes and 'technologies of the self'. This may well have led to his relative neglect amongst ICT researchers, though a similar omission does not seem to have done any harm to the reception of the work of Giddens and Habermas, for example (Mingers and Willcocks, 2004). Part of this may well be that Foucault comes less packaged, with less schemas that are easy to adopt. That said, some of his work, especially the image of the Panopticon, has been translated directly into, for example, studies of surveillance technologies (Lyon 1994, 2003), of the use of information and databases (Poster, 1990), and of discipline, information use and technologies at work (Webster, 2005; Zuboff, 1988).

However, Foucault's contribution can be much richer than this. For example, Foucault was well aware, not least from his reading of Heidegger, of the long-term, 'greatest danger' (Heidegger's phrase) from technology, as well as from Weberian rationalization (though Foucault (1983) prefers to investigate 'specific rationalities'), and the disciplining and normalization inherent in bio-power. Had he lived into the so-called 'Information Age' he might well have made the connections between these and the key roles of media-, military- and work-based information and communication technologies forming this present danger, arising, in Heidegger's 'essence of technology' (1977) and in Virilio's (2002) view, as technocratic thinking and imagination become social imagination itself. A Foucauldian perspective leads to a key question here:

'We have been able to see what forms of power relation were conveyed by various technologies (whether we are speaking of productions with economic aims, or institutions whose goal is social regulation, or of

techniques of communication). . . . *What is at stake, then, is this: How can the growth of capabilities be disconnected from the intensification of power relations?* M. Foucault: *What is Enlightenment* (In Rabinow, 1984).

From the early 1970's the word **technology** is increasingly to be found in Foucault's writings. The word is usually used in phrases such as 'technologies of power', 'political technology of the body', 'disciplinary technologies' and 'technologies of the self'. Foucault often elides the word technology with those of *techne* and also *technique*, but power always resides in his concept of technology whether referring to behavioural technologies, or to technology as architectures, buildings, physical artefacts and how space is defined and used. Foucault rarely seeks to define his use of the word technology. In an interview called *Space, Knowledge, and Power* (Rabinow, 1984), while discussing the study of architecture, Foucault offers, somewhat elliptically, the following:

'What interests me more is to focus on what the Greeks called techne, that is to say, a practical rationality governed by a conscious goal. . . . The disadvantage of this word techne, I realize is its relation to the word 'technology' which has a very specific meaning. . . . one thinks of hard technology, the technology of wood, of fire, of electricity. Whereas government is also a function of technology: the government of individuals, the government of souls, the government of the self by the self, the government of families, the government of children and so on.'

An interesting contrast can be made with Heidegger who was interested in the products and tools of the **natural sciences**, and focused on 'the essence of technology', or what Dreyfus (2003) calls *technicity*, that is the new technocratic thinking and style of practices that have emerged, distinguished from the technological devices these practices produce and sustain. For Foucault, too, to judge technology by its tools and its production is to miss the point. In his later work, however, he is looking at modern **human sciences**, the practices and power relations by which they are founded, the knowledge and behavioural technologies they produce, and these operate, allied to structures, designed space, and use of tools and artefacts. Moreover the operation of these new methods (technologies?) of power '*is not ensured by right but by technique, not by law but by normalization, not by punishment but by control*' (Foucault, 1978).

Furthermore, these technologies of power function anonymously - they are implemented by everyone and no-one - and autonomously - for, as Foucault once commented in an interview: '*while people know what they do, and may know why they do what they do, they do not know what what they do does.*' Given this distinctive, historically recent blending of knowledges, disciplinary technologies and bio-power, power/knowledge emerges as the key concept in Foucault's philosophy of modern technology. However this philosophy of technology is particularistic. Unlike Heidegger, he does not attempt a general account of the 'essence' of modern technology, but rather reveals specific histories of technological practices overlooked in other accounts of modern forms of power.

Several points occur here. Firstly, it is important to stress that Foucault does not deny that technologies of power/knowledge can have beneficial features: '*my point is not that everything is bad, but everything is dangerous. . . if everything is dangerous, then we always have something to do*' (Foucault, 1983). Secondly, especially in his later work, Foucault indicates that modern subjects can and do subvert the conditions of their own subjectivity. In the later volumes of *The History of Sexuality*, for example the individual is increasingly positioned as the personal space where both active and passive, and regulated and

resistant possibilities for human agency surface in the context of material practices (Katz, 2001). The self-subjection practices, or 'technologies of the self' as Foucault calls them, take on a more active, used dimension, less geared to relations of power and discourse, more geared to bending force back on itself, and so to self's work on the self. One can begin to read Haraway's (1991) cyborg manifesto: 'I would rather be a cyborg than a goddess' into the direction Foucault's work was taking.

Thirdly, Deleuze (1995) stresses that Foucault was one of the first to say that we have been shifting from disciplinary societies to what Deleuze calls **control societies**. These no longer operate by, for example, physically confining people but through continuous control and instant communication enabled by developments in material technology. In this rendering what has been called 'information society' can also be read as control society. If this is correct, then Foucault's power/knowledge, discourse, bio-power and governmentality remain as thoroughly applicable concepts, as Foucault intended them to. Moreover, Deleuze points out that if each kind of society corresponds to a particular machine e.g simple mechanical for sovereign societies, thermo-dynamic machines for disciplinary societies and cybernetic machines and computers for control societies, then: 'the machines don't explain anything, you have to analyze the collective arrangements of which the machines are just one component'. In other words, the machines do not determine different kinds of society, but do express the social forms capable of producing them and making use of them. And of course, as we argue later, the shift to new forms of society can be exaggerated, as we have seen in the rhetorics of postmodernism, and on the Internet, digital and knowledge economies.

Foucault – 'Ghost' in the Automate/Informate Debate

While Foucault never wrote explicitly about ICTs, one book he might have written on the subject is, ironically, given the relative neglect of Foucault's work in the area, the most cited and celebrated in the whole of the IS field, namely Zuboff's 1988 book *In the Age of the Smart Machine*. The most cited aspect of Zuboff (1988) is its major premise. ICTs can be designed and applied to automate or informate work. The former option builds on ICT potential for speed and consistency, but creates deskilled blue and white collar jobs, minimizes job satisfaction, can displace physical labour, and increases the decision-making, discretion and remoteness of management. Informating, on the other hand, derives from the enormous transparency given by ICT-assisted information generated from an organization's underlying production and administrative processes. Informating enables much greater ICT potential to be exploited, and more commercial advantage to be gained.

Undoubtedly, changes in technology greatly increase what is possible. But, Zuboff argues, what subsequently happens depends on transformations, profound discontinuities in fact, in how knowledge, authority and technique are managed, and implies a comprehensive conscious strategy. The dilemma is posed by Zuboff as a stark and ultimately political question. Will managers move from drivers of largely bodily labour to drivers of learning? Do and will managers utilize ICT to support, and even reinforce, existing political, social and organizational structures and processes, or transform these and their own positions within them in order to gain the full pay-offs from ICT investments?

In all this, though not heavily referenced, the influence of Foucault is quite striking. Zuboff's concept of power is not exactly that of Foucault's but, for her, power is a key concept, does circulate and is intimately related to skills and types of knowledge. Like Foucault, she downplays conspiracy, and instead stresses contingency and expediency in how things turn out. Her approach in taking a long-run historical perspective on the labouring body and skill in production and white-collar work, on managerial authority (called by her 'the spiritual dimension of power'), and in presenting ICT as a potential discontinuity – all these echo the shape of Foucault's work in many places. In many ways Zuboff maps a long-run, complex, Foucault-like discourse on management, work, technology and struggles, into which ICTs are finding their way.

Foucault is also influential in Zuboff's concentration on technique, which she calls the material dimension of power. The debt then becomes explicit in the related two chapter headings, namely 'The Information Panopticon' and 'Panoptic Power and The Social Text'. Her focus on bio-power and the microphysics of power – how power produces bodies and minds is also the Foucault of *Discipline and Punish*. Interestingly here, in her excellent research methodology, she gives a central place to phenomenology – a move Foucault would have needed to make if he had wanted to explore bio-power further at the material level in institutional settings. The automate/informate dilemma is also one that points, Foucauldian-like, to 'the present danger': will we reinforce present disciplinary, panoptic tendencies through ICT applications, or will we take up other options the new boost in power and possibilities these technologies can offer. Ultimately the pessimism in her findings, and to some extent her conclusions also remind one of Foucault's own dilemmas with disciplinary/bio-power.

But something interesting then happens to the direction which the informate/automate debate takes. As Zuboff's book becomes a bestseller, its Foucauldian influences and themes fall away almost completely, and the automate/informate dilemma comes to be posed as a choice for managers and, indeed capitalist societies to make. Partly this is because how the book is sold, with a simplified central message, an 'informate' challenge, indeed, that Zuboff asks managers to step up to in her last chapter. But interestingly, there is some inconsistency between, on the one hand, the rich historical discourse and constraints she describes, and, on the other, the levels of active **choice** she then assumes for managers.

In practice, Zuboff's work becomes adopted by the Harvard Business School where she was, at the time, an associate professor. Harnessing the School's reputational effects and its powerful marketing and self-referencing capability, the book's public messages are pushed into certain directions rather than others. In fact, arguably, the book is used to support Harvard's own 'can do' 'born again' transformative philosophy of management, in which a dichotomous before/after, from/to message is transmitted to trainee managers and businesses alike. Simple, powerful messages are likely to be more influential than the twists and turns of a long, rich and complex book that most have probably read about, rather than read all the way through. Power/knowledge circulates, people, institutions and documents are its relays – knowledge and power produce each other indeed.

Ultimately the meaning of Zuboff's book is diluted and rendered complementary to, for example, Walton (1989), also a product of Harvard. Walton's work goes on to figure prominently in another book highly influential in IS, namely the *Corporation of the 1990s* (Scott Morton, 1991). This proceeds to offer dichotomous thinking in contrasting bad/good 'control' versus 'commitment' strategies in ICT use, and, in an un-Foucauldian manner, fails to problematize commitment strategies and their political and

control implications. A more informed view here is provided by Deetz (1998) and Townley (1993) who see the cultural or normative controls that operate as alternatives to bureaucratic rules and direct supervision as new technologies of power developed within knowledge-intensive organizations.

A related, influential development has been the neo-Zuboffian 'don't automate, obliterate' message of Hammer and Champy's writings on re-engineering the corporation, with heavy use of ICTs. Grint and Willcocks (1995) point out that Hammer and Champy work with a negative, unitary view of power, and while the objective of re-engineering is ostensibly to render the corporation a-political, in fact successful re-engineering, supported by labour 'empowerment' strategies is designed to make managerial power and control more complete. The inherently political agenda is signalled by the marked violence in the language used, the dismissal of 'resistance to change', the determination to banish social, cultural and historical issues by starting with a blank sheet of paper, the use of management determined ICT designs to support the shape and process of the transformed corporation. On this view 'informate' is too small a step, and 'transformate' is necessary (see also Scott Morton, 1991), but only a more radical view of power relations would seek to fully problematize the intentions, approaches and outcomes. Those in IS studying such phenomena could more than usefully adopt Foucauldian concepts and modes of analysis.

Foucault And Disciplining 'Information Systems'

Ironically, again, the Foucauldian elements of Zuboff's book have been remarkably *uninfluential* in Information Systems, a relatively immature discipline crying out for applicable theory. But Zuboff's influence, taught as she is on every conceivable type of IS programme, has hardly stretched to the founding of a Foucauldian school of IS. Despite her demonstration of his applicability, why **not** Foucault now?

The operational word here may well be discipline. For decades a string of scholars and articles have registered 'discipline anxiety' for IS. This comes from its relative newness as an area of study and its hybridity, based as it is on an amalgamation of computer science, operational research, management studies, economics, organization studies, strategic management, to name a few. The definitional phrase that comes to mind is the one Richard Whitley used for management studies: a fragmented adhocracy. How to discipline, and gain intellectual respectability for a knowledge field lacking discipline?

A natural tendency is to look to another accepted reference discipline for already approved methods, procedures, standards, for definitions of what qualifies as knowledge and truth. One unfortunate outcome in IS is that methods and approaches have often been adopted uncritically (that is, failing to address the debates that surround them in their own discipline e.g. transaction cost theory in economics), or may be inappropriate for the specific research task. This can lead to unnecessary defensive polarities developing, and an over-expectation on what a particular approach can deliver.

For historical reasons - not least because of the hard, technology component of IS, the general dominance of the procedures of the natural sciences infiltrating into the social sciences, the large influence of North American academic practices in IS - the IS tendency has been to focus on quantitative, statistics-based methods and procedures derived from natural sciences. The rise of IS as a discipline has yet to be charted satisfactorily, and may well benefit from a Foucauldian analysis. IS awaits its genealogist,

though Introna (2001) makes a thought-provoking start in his paper on evolving regimes of truth from 1977 to 2000 at one of the major IS journals, namely MIS Quarterly. He shows the mechanisms used to produce truth, and how contingent they were. Also how, through intentional and unintentional moves, these regimes of truth were continually shifting, opening spaces for certain types of research to become legitimate, and others not. It is a matter of some pertinence here that the widespread acceptance of certain types of qualitative, interpretative and case research into major IS journals has been a relatively recent phenomenon. In such an unstable situation, given their cross-disciplinarity, and provisional methods, Foucauldian-type studies, at best, could only be marginal to how the IS discipline has been developing.

The debate on what would constitute IS as a discipline has been running for some time. Post-2000, faced with the sheer rising diversity in research methods being adopted in the field, there has been renewed 'discipline anxiety' and fresh debates in several major IS journals over establishing the rules, procedures for what counts as knowledge, and how it can be legitimately produced. Introna (2003) makes an interesting Foucauldian intervention in pointing out that what constitutes acceptable research methods, processes for producing the truth, and a definable knowledge base are not matters of what is right or rationally superior, but are inherently political questions from the start. Moreover participants are not just disciplining others in the process of creating 'the IS discipline', but also disciplining themselves. Introna (2003) also points out that if IS proceeds to constitute itself as a regime of truth then it will need to follow Foucault (in Gordon, 1980) in establishing five things. These are:

- the types of discourse it accepts and makes function as true;
- mechanisms and instances that enable one to distinguish true and false statements;
- means by which each is sanctioned
- techniques and procedures accorded value in the acquisition of truth
- status of those charged with saying what counts as true

On these counts, one would suggest that if IS is not yet externally or even self-regarded as a discipline, it has been remarkably successful at disciplining itself, and that this process deserves much more detailed, perhaps Foucauldian study.

Assessing Foucault's Use in IS Studies

Having said all this, some within IS have made a strong case for Foucault, and indeed have used aspects of his work. Introna (1997) effectively utilizes Foucault's power/knowledge in harness with Clegg's (1989) conceptualization of circuits of power, in order to explicate several case studies of ICT implementation and use. Brooke (2002ab) in discussing what it means to be 'critical' in IS research argues that Foucault can be used to move beyond the Habermasian framework employed in earlier IS work. As a related point, initially Habermas was presented somewhat uncritically in IS, but there has grown up a healthy critique of his use which Foucault's work can readily fuel (Klein and Huynh, 2004). Indeed Foucault challenges an idea central to critical theory when he suggests that relations of power are not something bad in themselves, nor something from which one can or must be emancipated. Foucault also argues that any production of knowledge contains within itself the potential for contradictory outcomes.

If this useful then the scientific and positivistic heritage of IS does tend to favour adoption of approaches that are more easily 'modelled', and any line of research seeking to use a normatively articulated framework will tend to favour a Habermasian approach rather than a Foucauldian one. But when it comes to applying critical theory, who guards the guards? From a Foucauldian perspective, it is not enough to apply particular methodological frameworks, we also have to subject them to on-going critique, and Foucault's work supplies means for doing this.

Davies has also sought to apply Foucault in several pieces of empirical research. For example, Davies and Mitchell (1994) adopted a research perspective that sought to understand technology formation as a power-knowledge object used within a socio-political context, but also looking at 'how technological forms affect the predomination of discourse of power, allowing for the 'truth' of an object's utility value to emerge as a product of its own structural form and the value of the form according to the group world-view adopting it'. The authors argue, with Burrell (1998), that Foucault's genealogical method, focus on history, and concept of power/knowledge are of high relevance to studying organizational forms currently emerging, particularly in relation to the control of information effects induced by the increasing reliance upon information technologies within organizations.

While Davies and Mitchell do not adopt Foucault as comprehensively as they might, they do demonstrate how his work on the regulatory nature of discourse within contextual histories can be used productively in IS studies, in this case that of IT manipulation in an Australian state government department. Following Foucault, they point to the constraining regulations by which discourse are inevitably tied. They take three interacting forms, shown in Figure 1.

EXCLUSION		
Prohibition	Division	Truth Power
<i>Taboos</i>	<i>Legitimate participation</i>	<i>True vs False</i>
LIMITATION		
Commentary	Rarefaction	Disciplines
<i>Meaning rules Maintained</i>	<i>Identity rules Maintained</i>	<i>Belief rules Maintained</i>
COMMUNICATION		
Societies of Discourse	Social Appropriation	Systems of Regulation and Control
<i>Social group</i>	<i>Maintain or modify</i>	<i>Production and Manipulation</i>

Figure 1 – Principles of Discourse Regulation (adapted from Davies and Mitchell, 1994)(after Foucault)

The three principles of exclusion are immediately external to a discourse and define and legitimize meaning and rationality within discourse. The three principles of

limitation operate to classify order and distribute the discourse to allow for and to deal with irruption and unpredictability. Finally the three principles of communication create the ritual framework (akin to an ideology) of the context of any discourse, with the ritual framework being more dominating than the merely external principles.

While these constructs may seem somewhat abstracted, the researchers do bring them to life in applying them to a concrete case, namely the purchasing of office support systems. By applying all the concepts, the research shows how one system is adopted in preference to another, predominantly through the prior regulations of discourse supporting the continuance of the superior technical knowledge and power of the IT function. The researchers successfully show how applying Foucauldian principles to analysing the discursive context of IT use in an organization can provide in-depth insight into the role of power and politics, and whether IT is used augmentatively to reinforce the status quo, or transformatively.

A later Foucauldian study of an ICT needs analysis project was also carried out by Davies, as Harvey (1998). The study usefully demonstrates how the history of power relations in an IT decision context influenced discourses regarding the acceptability of solutions. Historical dominance was demonstrated through how visibility was controlled, how counter-discourses were silenced, and how surveillance was applied. What is interesting in this study, that of Davies and Mitchell (1994) and of Zuboff (1998) is how they all extend and enhance interpretive research methods through using Foucault. Indeed, though interpretivism was never a direction in which Foucault himself was heading, Doolin (1998) argues that this is a necessary move in order to counter potential shortcomings in the treatment of technology in interpretive research on information systems.

For our purposes, Doolin (1998) is more useful in illustrating this theme of information systems as a calculative and disciplinary technology. He does so by reference to his own Foucauldian study of power relations and effects involving the deployment of a hospital 'casemix' IS. A case mix system is an IS which links detailed information on individual patient clinical activity with associated costs, for use by managers and service providers as a basis for contracting and for revealing the relative efficiency of clinical resource usage. The intention is to place clinical activity under scrutiny, and to persuade clinicians to conform to 'normal' work practices. Potentially Doolin found that the IS could increase hospital management control directly and indirectly. Direct control was attempted by monitoring and making visible the financial implications of clinical decisions. Managers could then use the information make stronger truth claims in their attempts to contain clinical resource usage. Surveillance through the system also had the potential to engender a degree of self-control in clinician's behaviour. Leading to rational decision-making and more efficient usage of resources.

However, following Foucault, resistance by the clinicians was always possible. Disciplinary technologies such as comparative surveillance IS are not exclusively constraining, but instead open up a new discursive space for action. In practice clinicians often appropriated and manipulated the information and rhetoric of the system, diverting disciplinary practices to their own ends, principally in arguing for more resources. Indeed some senior clinicians explored the possibilities offered by the casemix system in assuming new roles as clinician managers. However, the IS increased the transparency of professional knowledge, expertise and work processes. Its deployment provided management with the technology and the rational justification for increased intervention in medical practice. Moreover, casemix information became the currency of debate, the principal media through which claims to legitimacy and control were

processed. Taking a Foucauldian view, Doolin points out that in reproducing the practices associated with the casemix IS, clinicians internalized the norms and values inherent in the particular discourse in which casemix is grounded, opening up the possibility of their self-control as self-disciplined subjects. Thus IS utilization could have more subtle power effects than deliberate strategies to modify clinical behaviour through strengthening general management in or imposing computerized surveillance.

These illustrative studies demonstrate how Foucault's work can be utilised creatively and productively in the IS field. Indeed IS as a discipline may learn a great deal more on the applicability of Foucault if it addresses more seriously the altogether more developed debate and application of his work to be found in Organization Studies and associated areas (OS/MS).

Foucault and ICTs in Organization and Management Studies

Foucault has had a long-standing presence in sociology and OS/MS because his concepts and contribution have such clear applicability to researching work organizations. Moreover, from the early 1980s as ICTs became increasingly used in organizations, it became a necessary move to embrace the analysis of how they are utilised and embedded in the social bodies, practices and institutional arrangements of organizations. The same argument can be made from the perspective of Information Systems studies, of course, but, one suspects, its engineering/computer science origins led to a greater focus on the technology artefact. Discipline anxiety led to the adoption of more scientific and 'rigorous' reference disciplines, while those rising to powerful positions in the IS field tended not to espouse approaches, especially unsystematic ones, they had not themselves been trained in.

The maturity of OS/MS Foucauldian debate and use is well demonstrated in the articles collected by McKinlay and Starkey (1998) and Carter, McKinlay and Rowlinson (2000). These carry penetrating papers that seek to critique, develop and utilize Foucault's work in for example human resource management (see also Townley, 1993), power and politics in organizations and production, managing managers, accounting, reading organizational analysis into Foucault, developing a Foucauldian historical dimension in the study of organizations, the relationships between discipline and desire, the epistemic nature of management, and the need to deconstruct management studies underpinned, like influencing disciplines, as it is by rationality, agency and causality.

Foucault has also done much to breathe new life into labour process theory, not least in OS/MS researchers emphasising how individual subjectivities and identities are constructed and reconstructed through discourses operating in the workplace (Knights, 1990; Knights and Vurdubakis, 1994). There has also been an expansion of the concept of power (Clegg, 1989; 1998), with Hardy and O'Sullivan (1998) positioning Foucault as providing the fourth dimension of power, extending the three defined by Steven Lukes. All this illustrates a strong Foucauldian pedigree in OS/MS, and one that is directly applicable to any work in IS where ICTs are studied in organizational contexts.

Even more pertinent to our purposes is the OS/MS accumulated evidence gained from applying Foucault to the study of information and communication technologies. Many of these attempts focus on new managerial technologies aimed to broaden the scope and deepen the intensity of the managerial gaze, but, Foucault-like, invariably with complex, often unanticipated outcomes. Surveillance, control and

legitimation is facilitated by giving complex, ambiguous phenomena 'hard' numerical values (Morgan and Willmott, 1993), for example in ICT use in activity-based costing systems where the managerial gaze extends into supplier networks and market information. ICTs facilitate enumeration, which can underpin categorization, and thus what is made visible. Such technologies privilege formal quantitative information, aiding in the construction of calculative realities (Bloomfield and Coombs, 1992).

However, developments in ICTs to monitor and scrutinize can also facilitate panopticon-like control, making individuals within an organization both calculable and calculating with respect to their own actions. For example, Sewell and Wilkinson (1992) investigate these propensities in the context of JIT manufacturing and Total Quality Control regimes. They point to the development to what Webster and Robins (1993) call 'a panopticon without walls', where responsibility can become delegated to groups, but individuals become enlisted in their own control through their belief that they are subject to constant electronic surveillance through collected, retained and disseminated information. McKinley and Starkey (1998) also point to how the extension of JIT supplier relationships accelerates the concentration, widens the scope and speed of corporate knowledge acquisition, and that this is knowledge combined with economic power that is not reciprocal; 'there is no parallel gaze by consumers or supplier companies into the internal transaction costs of the organization'. Webster and Robins (1993) suggest also that these development are not restricted to the labour process or the factory but are more societal, to the point where one can speak of a more generalised 'Social Taylorism' made more possible through information and communication technologies.

Bloomfield, Knights, Wilmott and colleagues have done much important work in developing Foucauldian studies of ICTs and organization. It is not possible to do justice to the richness of their work but good examples can be found in Knights, Murray and Willmott (1997), Bloomfield et al., (1997) and Bloomfield and Coombs (1992). A particularly representative work is that of Knights and Murray (1994). This book has the great merit in providing a real in-depth theoretical and empirical examination of the politics of systems development. In the theory sections it provides a Foucauldian-informed critique of the major theoretical perspectives on ICT development and implementation. From this Knights and Murray then develop a political processual model of organizational change. At its centre stands politics as Foucauldian power/knowledge relations enacted in specific conditions of possibility, the social construction of which is also part of an organization's political processes.

Knights and Murray also supply the useful definition of ICT Foucault never provided (see above), in order to inform their Foucauldian analysis. They see ICT as a set of human and non-human artefacts, processes and practices ordinarily directed towards modifying or transforming natural and social phenomena in pursuit of human purposes. This involves:

- technological artefacts, such as computers, hardware
- technological knowledge, particularly systems development skills
- technological workers and managers engaged in particular systems development, and IS specialists

- the culture of technology – signs, symbols and values brought to bear in discussing, using and developing technology

In this analytical framework, the organization is likened to a pinball machine. While recognising the limitations of the analogy, the researchers suggest that the political process stands in the middle of the machine and is bombarded by steel balls energised in different parts of the organization. These bounce against the motor of political process and are shot back to bounce against other conditions of the organization. Though a little uncritical of Foucault, as opposed to every other theoretical approach, Knights and Murray (1994) do provide, as they show in their case study, operationalisable analytical tools that can be very useful to ICT researchers.

Foucault, ICTs and Surveillance

Perhaps the most obvious and influential use of Foucault has been in surveillance studies, not just in manufacturing and service work organizations, but across society at large, including in all manner of institutional settings. There is a large literature on the theme of ICT roles in surveillance, with Lyon (1988) and Dandeker (1990) being representative of a number of writers in the late 1980s discussing the 'electronic panopticon', the 'carceral computer' and 'the electronic eye'. Poster (1984) is also influenced enough by Foucault to posit an emerging 'mode of information' by whose social conduits and databases members of developed economies are organized and controlled.

Webster (2005) also links surveillance technologies with the nation state's 'governmentality' role over security needs, rights and duties of its citizens. For him, the panopticon is not an exact metaphor. Following Giddens, a lot of surveillance information does feed back to people and allow them to reflexively monitor their own position, prospects and lifestyles. He is drawn instead to De Landa's (1991) depiction of the 'machine vision' of military surveillance where power and the accumulation of information are intimately connected, manifested in things like telecommunications interceptions satellite observations, and automatic intelligence. De Landa sees the military dream of machine vision as an extension of earlier panoptic techniques. Now humans and their eyes do not have to physically operate in the surveillance tower. Moreover surveillance has extended from the optical to the non-optical regions of the electromagnetic spectrum. Not just computing and telecommunications, but the discovery of infrared and ultraviolet radiation, radar, radio and microwave technology have opened new resources to be exploited as well as new zones to be policed. De Landa offers the word 'Panspectron' to communicate the ambition of total surveyability vested in the 'new non-optical intelligence-acquisition machine'. This is a highly pertinent issue, not least for IS studies, if De Landa is correct in suggesting that, historically, earlier technologies developed in the military have been transmitted through a series of relays to the civilian worlds.

Lyon (1988) registers related concerns in his early work on the rise of information society. He suggests that dreams of electronic democracy must be tempered with a recognition of technological and political realities. He recognises, even for the late 1980s, that the 'carceral computer' is 'a present reality, both in direct state administration and control, and in the potential for linkage with private databases'. However, as yet the dangers had not been sufficiently recognised or resisted by citizens, and some predictions of total social control by computers may be ahistorical 'in that past technological

dystopias have not come into being, and may also be based on inadequate social theories’.

If Lyon (1988) points to the ‘present danger’, then the subsequent direction much of his work takes suggests that in his estimation, with rising use of ICT, the danger has become very real. Thus Lyon (1994) is entitled *The Electronic Eye: the Rise of Surveillance Society*. For him the most socially pervasive question raised by the new technologies has become the garnering of personal information to be stored, matched, retrieved, processed, marketed, and circulated using powerful computer databases and related technologies. His position is that the electronic eye may well blink benignly, but important questions must be asked about under what circumstances and by what criteria the current computer-aided surveillance capability may also become undemocratic, coercive, impersonal, even inhuman.

In later work and edited volumes, Lyon and colleagues provide rich detailed studies of these and related questions (see for example Lyon and Zureik 1996, Lyon 2003). In all this, it becomes difficult not to read the influence and relevance of Foucault’s work, amongst others. Thus, in these volumes some take the phenomenon of electronic surveillance as contributing to a postmodern condition in which several ‘virtual selves’ circulate within networked databases, independent of their Cartesian counterparts who use credit cards and are identified by social insurance numbers (Lyon and Zureik, 1996). This raises questions of how identity and selves are constructed sorted and controlled, privately and publicly. In the same volume Mowshowitz sees the widespread use of databases promoting ‘endogenous’ forms of social control, where virtual individuality, group conformity and other-directedness will reside in the data themselves. For Poster, databases have become the new text in Foucault’s sense of discourse.

In all this, researchers point also to limitations in both Foucault’s work and in applying it to surveillance studies. Thus Gandy, writing on ‘Coming To Terms With the Panoptic Sort’ enlists also Giddens’s synthesis of Marxian, Weberian and Foucauldian theory to emphasis surveillance as a modern institution, and the role of the ‘dialectic of control’ and knowledgeable human agents in all surveillance situations (Lyon and Zureik, 1996). Zureik (in Lyon, 2003) concludes that surveillance in the workplace is ubiquitous and increasingly based on network control technologies. He suggests that the concept of panoptic power is important, but that more than one theoretical perspective is needed to analyse how in specific contexts empowerment and dis-empowerment, skilling and de-skilling, control and autonomy exist, and indeed can coexist, depending on technological deployment, gender and authority structures (but see also Knights and Murray above).

Lyon (1993) asks: in what ways does electronic surveillance display panoptic features? He finds plenty of evidence of ICT being used to accumulate coded information for the internal pacification of nation states. Also for panoptic control within workplaces, including what Zuboff calls ‘anticipatory conformity,’ where standards of management had been internalized by employees. He also cites evidence of the spill over of panoptic surveillance into society at large in the establishment of, for example more ‘efficient’ network marketplaces, something that Poster (1990) refers to as a ‘Superpanopticon’, because the panoptic has few technical limitations.

But, partly following Giddens, Lyon also sees analysts of electronic surveillance picking up from Foucault a relatively undifferentiated view of power and panopticism, and therefore of panopticism’s ICT-facilitated spread across different types of institutions. At the same time he concedes that the reality of contemporary electronic surveillance is that, increasingly, disciplinary networks do, for example, connect

employment with civil status, or consumption with policing. But if Poster's 'Superpanopticon' is accurate, nevertheless does it impose Foucault-type norms, incorporate bio-power, discipline subjects? Maybe, Lyon suggests, all it can do is provide a structure, and one within which real choices are still made. Ultimately Lyon finds the Panopticon wanting as an explanatory concept. Electronic surveillance does contribute to social control via invisible inspection and categorization. But seeing the Panopticon in a 'totalizing' way deflects attention from other modes of social ordering (Lyon, 2003). Lyon (1993) also comments that Foucault's failure to admit any basis of 'outrage' against the Panopticon inhibits the development of a properly critical theory of electronic surveillance.

Maybe one of the mistakes in contemporary surveillance theory, as in other disciplines, is to represent Foucault's work too one-sidedly by the Panopticon and its admittedly strong metaphorical power. As we have seen, Foucault is much richer than this. For example, in summarizing his own work Foucault defined four major types of technologies, each a matrix of practical reason, each associated with a certain type of domination (Deetz, 1998). Foucault presents technologies of production, of sign systems, of power, and technologies of self. He also suggests that these may interplay in particular sites. He also worked with a generic mode of discipline, of which the panoptic represents merely one type. One way forward for electronic surveillance studies may well be to re-address Foucault's work more fully. In addition Dandeker (1990) suggests that, given the uneasy relations in Foucault between an idealist history of knowledge, class struggle and the functional or technical imperatives of modern societies, his insights may be used to complement those generated by other, especially Weberian, strands of social theory.

From Mode Of Information To Network Society And Cyberstudies

In this final section, we look briefly at Foucault's abiding relevance in the face of developments of ICTs and their uses into the 21st century. Poster (1984, 1990, 1995) was amongst the first to suggest that Foucault provides key ideas (on signification, power/knowledge, subjectification, discourse) for the development of a critical theory of the newly emerging 'mode of information'. Poster suggests that the reversal of priorities Marx saw in the factory whereby the dead (machines) dominate the living (workers) is being increasingly extended by the computer to the realm of knowledge. He usefully posits three stages in the mode of information:

- Face-to-face, orally mediated exchange characterised by symbolic correspondences;
- Written exchanges mediated by print, characterised by the representation of signs;
- Electronically mediated exchange – characterised by informational simulations.

Given the attributes and applications of ICT, an increasing, distinctive characteristic in the latter electronic stage is that the self becomes decentred, dispersed and multiplied in continuous instability. If Poster (1990) subsequently utilizes several postmodernist thinkers to analyse the emerging mode of information, he finds how information is structured and used through databases, and their relation to society best disclosed by Foucault's analysis of discourse: 'the linguistic quality of the database, its implications for politics, can best be captured by a theory, like Foucault's, that problematizes the interdependence of language and action.' As we have seen, Poster sees electronic circuits

of communication and the databases they generate constituting a Superpanopticon, a system of surveillance without walls, windows, towers, or guards.

New ICTs used in surveillance result in a qualitative change in the microphysics of power. However, he observes, technological change, is only part of the process. The populace, through social security cards, drivers' licences and in their consumerist activities, for example, have been disciplined to surveillance and participating in the process. For Poster (1990, 1995), when Foucauldian discourse analysis is applied to the new mode of information, it yields the uncomfortable discovery that the populace participates in its own self-constitution as subjects of the normalizing gaze of the Superpanopticon. Moreover, databases are seen often not as a threat to a centred individual or a threat to privacy, but as the multiplication of the individual, the constitution of an additional self, on that may be acted upon to the detriment of the 'real' self without that 'real' self ever being aware of what is happening. For Poster, then, while recognising the deficiencies of Foucault's work, the concepts and methods for exploring discourse, subjectification, disciplining, knowledge and power relations remain key to critical study of ICTs, and indeed the Internet (Poster, 2001) in the emerging mode of information. they facilitate. While the genealogy of information and communications technologies has yet to be written, Foucault, as Poster (1990) recognises, provides a considerable amount of the groundwork needed.

Munro (2000) also recognises how Foucault has been drawn upon to analyse the power relations involved in computer information systems. As a partial corrective, he argues not that disciplinary modalities of power have disappeared, but that they are subject to infiltration and mutation where ICTs are transforming social relationships and allowing other forms of power to be brought to bear. The examples he includes are how the Human Genome project is bringing to bear bio-technologies such as genetic screening and cloning. He also cites Deleuze's (1995) depiction of moves towards a 'control' society e.g from schools to continuing education, from prisons to electronic tagging,. Also new forms of 'resistance' are possible e.g computer piracy and viruses, sabotage of information databases. Also new social divisions are developing, including the information haves and have-nots. Also new institutions, consisting of series of connected nodes or stations that work by circulating information flows as much as wealth and goods. He points to the power of networks and how these new institutions do not rely on enclosure or visual surveillance. Instead power operates through the regulation of flows rather than the imposition of exercises (Deleuze, 1995).

Diagram	APanopticon	ANetwork
Techniques	Dressage	Control of flows
	The Panopticon-visual surveillance	The Panspectron-data surveillance
Space	Confined cells	Connected nodes (stations)
Time	Timetable	Global 'real time'
The body	Doodle body	Mbile body

Figure 2 – The Panopticon and The Network (after Munro, 2000)

Munro's posits the rise of network power in contrast to panoptic power. The differentiation he makes is along the dimensions of techniques, space, time and the body (Figure 2). At the level of technique, power relations become more centred on access to and control over information and the electronic text. Time-space constraints disappear, with real time and connected nodes creating new circuits of power. Following Virilio, the body becomes motile, that is more dependent on communications prosthetics e.g mobile phone, portable computer. Whereas the docile body was the object of disciplinary power, the prosthetic body is the object of network power.

Munro argues that sticking doggedly to Foucault's original conceptualisations of disciplinary power can lead to errors in analysis in these new conditions. Bauman (1991; 1999) also recognises Foucault as seminal in the study of disciplinary societies and their technologies but posits less relevance for control technologies in the changed conditions of liquid modernity. However, while Bauman argues that seduction tends to replace panoptic forms of control, he does posit that large parts of the population still require close control. Moreover Bauman and Munro probably underestimate the extent to which the new ICTS themselves are conditioned in the first place, and may subsequently be infiltrated by disciplinary power (Finlay, 1987ab). Munro's is a good formulation, but over-dichotomous in its presentation of developments. And as with computer surveillance studies, his argument also relies on not granting to Foucauldian analysis the full richness of Foucault's ideas and formulations.

In contrast, in documenting what they call 'changes in the technoscape' Robins and Webster (1999) argue that the information revolution does not represent a profound break from the past, but a continuation of capitalism in many similar forms. Moreover, the prevailing virtual culture 'lacks critical edge with respect to the capitalist dynamics of the network society' (see also Feenberg, 2002). If this is the case, then not only is Foucault not outdated, as some have suggested, but means of critical questioning such as he provides are vitally needed in the study of contemporary ICTs.

In looking at contemporary developments one can trace Foucault's influence into work on bio-power and technology. Best and Kellner (2001) argue otherwise and point out that while Foucault (1970) heralded the 'death of man' and the coming of post humanism, he saw this as a merely conceptual transformation from one episteme to another, whereas the shift to posthumanism is also a **material** matter of new technologies erasing the boundaries between biology and technology. They argue that Foucault provides no analysis of information and communications technologies, and little consideration of the hybrid landscape of techno-bodies. However, Best and Kellner have to concede that Foucault considers both the enmeshment of the body in systems of discipline and surveillance, and ethical technologies of the self that cultivate 'new passions and new pleasures'.

Hayles (1999) rightly points out that the absorption of embodiment into discourse imparted interpretive power to Foucault, but also limited his analysis in significant ways. The universalization of the Foucauldian body is a direct result of concentrating on discourse rather than embodiment. Building on Foucault's work while going beyond it requires understanding how embodiment moves in conjunction with inscription, technology and ideology. But, as we have seen, this is something that Zuboff's work largely achieves, while Sofoulis (2002) rightly points out Foucault's influence on Haraway (1991) and her subsequent development of his notions of bio-power and bio-politics in her post-Foucauldian notions of the 'informatics of domination' and 'techno-biopower'. Quinby (1999) has also re-orientated Foucault's

work on subject formation. She uses it to develop how 'technoppression' can occur in the pursuit of the programmed perfection enabled by digital and biotechnologies. A Foucauldian perspective is useful in questioning the race to human bodily perfection through technological means.

Finally, one can point to some interest in Foucault's work amongst those studying the Internet. The questioning here is whether the Internet, and 'cyberspace' is or will become a form of more intensive control and power relations - precisely Foucault's concern registered at the head of this chapter. The literature so far tends to have different interests and emphases. Three examples need suffice. Thus Aycock (1997) is interested in applying the later Foucault and his notions of technologies of the self to examine how on-line identities can be fashioned. Winokur (2003) applies yet again the concept of the panopticon, and concludes that the codes of cyberspace are not clearly a disciplinary discourse. Boyle (1997) is interested in legal issues, surveillance, levels of censorship and the development of digital libertarianism. He argues that digital libertarianism is often blind to the effects of private power, but also the state's own power in cyberspace. In practice he finds that the state can often use privatised enforcement and state-backed technologies to evade some of the supposed practical and constitutional restraints on the exercise of legal power over the Net. He also argues that technical solutions to these dilemmas are neither as neutral nor as benign as they are often perceived to be.

CONCLUSION

In providing a critical review, this paper has argued for the abiding relevance of Foucault's work and the usefulness of incorporating and developing further his thinking into contemporary studies of ICTs. This should be done as a critical act in three senses. Firstly, Foucault should not be applied uncritically. Following Barratt (2003), he should be worked with rather than copied. This paper accepts the provisional, unfinished nature of many of his concepts and formulations, but also demonstrates how these can, and have been addressed in the study of ICTs, for example with the use of ethnography (Zuboff, 1988), and, we would argue, through social construction approaches. Secondly, Foucault has been shown to be a critical weapon usable in an IS field not over-full of such tools (the same is not argued for OS/MS which have been much more critically aware). Moreover, as in the case of the Foucault-Habermas debates for example (Ashenden and Owen, 1999), Foucault can be used to sharpen our critique of other, explicit or implicit social theories and philosophies perhaps borrowed from reputationally stronger reference disciplines, and used uncritically in a relatively new IS field. Finally, as we saw, Foucault can be employed in the on-going debate over the nature of, and what it is to construct, an IS, or any other discipline.

Fundamentally Foucault reminds us, uncomfortably, of our epistemological frailty and ontological uncertainties, and from this can sensitize us to how much human use of ICT is a will towards control, certainty and 'knowledge' in the face of considerable risk and ambivalence. If he does not deal explicitly with ICTs as hardware and software, he does provide a useful corrective against narrow definitions of technology and ICT applications. Instead of privileging material technology, he privileges the behavioural and social technologies encoded and imbedded in material technologies. This provides an important corrective to recent 'digital economy' rhetorics about the transformative power of ICTs in themselves. Furthermore, his work suggests that all participate in the technologies that surround us, whether these are invisible or visible, whether we know it or not. Despite how he is generally presented, Foucault also urges us

to acknowledge indeterminacy. There is, for example, nothing inevitable about technology trajectories. In acknowledging indeterminacy in the history of technology we may note with Scranton (1995) Foucault's comment that:

'nothing is fundamental ... (there) are no fundamental phenomena. There are only reciprocal relations, and the perpetual gaps between intentions in relation to one another (Foucault, 1996).

Finally, while Foucault's work still awaits the further application it deserves in the ICT studies, it is strange that his theorisations of knowledge, power and discourse, have not been utilised more productively in for example, deconstructing knowledge management and related systems. In the ICT context knowledge awaits its genealogist, and this may be one of the richer veins yet to emerge from Foucault's potentially important contributions to the ongoing study of information and communication technologies and their applications as part of organizations. To bring a number of strands together, and indicate one way forward, one can posit here, for example, a genealogical/historical analysis of the knowledge management discourse informed by power/knowledge concepts under the four conditions of possibility outlined by Knights and Murray (1994) For analytical purposes these are separated out as:

- Organizational – structure, practices, culture
- Subjectivity and Security – subjectivity/identity and individual insecurity management (see also Knights, 1990)
- Socio-political and economic conditions – general and local contextual factors prevailing, including those affecting gender and race relations
- Technological possibilities – solutions and innovations that can be developed from a given technology, given constraining aspects of local conditions.

However, this is only one way forward and Foucault himself indicated how he would see his work being used: *'a kind of tool box which others can rummage through to find a tool which they can use however they wish in their own area... I don't write for an audience, I write for users not readers.'* (quoted in Defert et al., 1994)

Foucauldian studies on ICT will be more fundamentally distinguished by their critical intent, realized through their historical dimension, pursuing Foucault's concern to problematize the inevitability of the present and question how things have turned out to be as they are and not otherwise. He sought to create a history of the different modes by which human beings are made subjects. More particularly his work is concerned with studying classification, dividing and self-subjectification practices across three fields of subjectivity, namely the body, population and the individual (Foucault, 1983). Since his death in 1984 we have seen an enormous growth in ICT capabilities, and their rising incursion into all aspect of life in the developed economies. Foucault's remit remains abidingly important and he leaves us with a 'toolbox' to help us confront a fundamental guiding question: How indeed can the growth of technological capabilities be disconnected from the intensification of power relations?

REFERENCES

- Ashenden, S. and Owen, D. (eds.) (1999). *Foucault Contra Habermas: Recasting The Dialogue Between Genealogy and Critical Theory*. Sage, London
- Aycock, A. (1997) Technologies Of The Self: Foucault and Internet Discourse. *Journal Of Computer Mediated Communication*, 1, 2, 25-38
- Barratt, E. (2003). Foucault, HRM, and The Ethos Of The Critical Management Scholar. *Journal Of Management Studies*, 40, 5, 1069-87
- Bauman, Z. (1991) *Intimations Of Postmodernity*. Routledge, London
- Bauman, Z. (1999) *Globalization: The Human Consequences*. Polity Press, Cambridge
- Best, S. and Kellner, D. (2001) *The Postmodern Adventure: Science Technology and Cultural Studies at The Third Millenium*. Routledge, London
- Bloomfield, B. and Coombs, R. (1992) Information Technology, Control and Power: The Centralization and Decentralization Debate Revisited. *Journal Of Management Studies*, 29, 4, 459-84.
- Bloomfield, B., Coombs, R., Knights, D. and Littler, D. (eds.) (1997). *Information Technology and Organizations*. Oxford University Press, Oxford.
- Boyle, J. (1997). Foucault In Cyberspace: Surveillance, Sovereignty and Hard-wired Censors. *Cincinnati Law Review*. Cited in wcl.american.edu/pub/faculty/boyle.
- Brooke, C. (2002a) What Does It Mean to Be 'Critical' In IS Research? *Journal Of Information Technology*, 17, 2, 49-58.
- Brooke, C. (2002b) Critical Perspectives On Information Systems: An Impression Of The Research Landscape. *Journal Of Information Technology*, 17, 4, 271-285.
- Burrell, G. (1998). Modernism, Postmodernism and Organizational Analysis: The Contribution Of Michel Foucault. In McKinley, A. and Starkey, K. (eds.) (1998) *Foucault, Management and Organization Theory*. Sage, London.
- Carter, C., McKinlay., and Rowlinson, M. (eds.) (2000). Special Issue and Introduction: Foucault, Management and History. *Organization Special Issue Volume 9, 4.*, Introduction 515-526.
- Clegg, S. (1989) *Frameworks Of Power*. Sage, London.
- Clegg, S. (1998). Foucault, Power and Organizations. In McKinley, A. and Starkey, K. (eds.) (1998) *Foucault, Management and Organization Theory*. Sage, London.
- Dandeker, C. (1990). *Surveillance, Power and Modernity*. Polity Press, Cambridge.
- Davies, L. and Mitchell, G. (1994). The Dual Nature Of The Impact Of IT On Organizational Transformations. In Baskerville, R., Smithson, S., Ngwenyama, O. and DeGross, J. (eds.) *Transforming Organizations With Information Technology*. Elsevier science, North Holland.
- De Landa, M. (1991) *War In The Age Of Intelligent Machines*. Swerve Editions, New York
- Deetz, S. (1998) (Re)constructing The Modern Organization. In McKinley, A. and Starkey, K. (eds.) (1998) *Foucault, Management and Organization Theory*. Sage, London.
- Defert, D., Ewald, F. and Lagrange, J. (eds.) (1994). *Dits Et Ecrits 1954-1988. volumes 1-4*. Gallimard, Paris.

- Deleuze, G. (1995) *Negotiations: 1972-1990*. Columbia University Press, New York
- Doolin, B. (1998) Information Technology As A Disciplinary Technology: Being Critical In Interpretive Research In Information Systems. *Journal Of Information Technology*, 13, 4, 301-312
- Dreyfus, H. and Rabinow, P. (1983). *Michel Foucault: Beyond Structuralism and Hermeneutics*. Second Edition. University Of Chicago Press, Chicago.
- Feenberg, A. (2002) *Transforming Technology: A Critical Theory Revisited*. Oxford University Press, Oxford.
- Finlay, M. (1987a) Technology As Practice: And (So) What About Emancipatory Interest. *Canadian Journal Of Political and Social Theory*, 11, 1-2, 198-214.
- Finlay, M. (1987b) *Powermatics: A Discursive Critique Of New Communications Technology*. Routledge, Kegan and Paul, London
- Foucault, M. (1970). *The Order Of Things: An Archaeology Of The Human Sciences* . Tavistock, London. Original French version 1966.
- Foucault, M. (1978) *The History of Sexuality Volume 1: An Introduction*. Pantheon Books, New York. Original French version 1976.
- Foucault, M. (1983) The Subject and Power. In Dreyfus, H. and Rabinow, P. (1983). *Michel Foucault: Beyond Structuralism and Hermeneutics*. Second Edition. University Of Chicago Press, Chicago.
- Foucault, M. (1996) *Foucault Live: Collected Interviews*. 1961-84. Semiotexte, New York.
- Gordon, C. (ed.) (1980) *Foucault: Power/Knowledge*. Selected Interviews and Other Writings 1972-77. Harvetster, Brighton
- Grint, K. and Willcocks, L. (1995) Business Process Reengineering in Theory and Practice: Paradise Regained? *New Technology Work and Employment*, 10, 2, 99-109.
- Haraway, D. (1991) *Cyborgs and Women: The Reinvention Of Nature*. Routledge, New York.
- Hardy, C. and Leiba-O'Sullivan, S. (1998). The Power behind Empowerment: Implications For Research and Practice. *Human Relations*, 51, 451-85.
- Hayles, K. (1999) *How We Became Posthuman*. University of Chicago Press, Chicago.
- Harvey, L. (1998). Visibility, Silencing and Surveillance In An IT Needs Analysis Project. In Larsen, T., Levine, L. and DeGross, J. (eds.) *Information Systems: Current Issues And Future Challenges*. Elsevier Science, North Holland.
- Heidegger, M. (1977) *The Question Concerning Technology and Other Essays*. Harper Row, New York.
- Introna, L. (1997) *Management, Information and Power*. Palgrave, London.
- Introna, L.D. (2001) Truth and its Politics: Evolving Regimes of Truth at the MISQ, In Howcroft, D and Adam, A, (eds.) (Re) Defining Critical Research in Information Systems, *Proceedings of the CRIS Workshop*, University of Salford (July 2001), pp.45-55.
- Introna, L. (2003) Disciplining Information Systems: Truth and its Regimes. *European Journal Of Information Systems*, 12, 235-240.
- Katz, S. (2001) Michel Foucault. In Elliott, A. and Turner, B. (eds.) *Profiles in Social Theory*. Sage, London.

- Knights, D. (1990) Subjectivity, Power and The Labour Process. In Knights, D. and Willmott, H. (eds.) *Labour Process Theory*. Macmillan, London.
- Knights, D. and Murray, F. (1994). *Managers Divided: Organizational Politics and Information Technology Management*. Wiley, Chichester
- Knights, D., Murray, F., and Willmott, H. (1997) Networking As Knowledge Work: A In Bloomfield, B., Coombs, R, Knights, D. and Littler, D. (eds.) *Information Technology and Organizations*. Oxford University Press, Oxford.
- Knights, D. and Vurdubakis, T. (1994) Foucault, Power, Resistance and All That. In Jermier, J., Knights, D. and Nord, W. (eds.) *Resistance and Power In Organizations*. Routledge, London.
- Klein, H. and Hunyh, M. (2004). The Critical Theory of Jurgen Habermans and Its Implications for IS Research. In Mingers, J. and Willcocks, L. (eds.) (2004). *Social Theory and Philosophy For Information Systems*. Wiley, Chichester.
- Kritzmann, L. (ed.) (1988). *Foucault: Politics, Philosophy, Culture: Interviews and Other Writings 1977-84*. Routledge, New York
- Lyon, D. (1988) *The Information Society: Issues and Illusions*. Polity Press, Cambridge.
- Lyon, D. (1993) An Electronic Panopticon? A Sociological Critique Of Surveillance Society. *The Sociological Review*, 41, 4, 653-678.
- Lyon, D. (1994). *The Rise Of Surveillance Society*. Polity Press, Cambridge.
- Lyon, D. and Zureik, E. (eds.) (1996) *Computers, Surveillance and Privacy*. University of Minnesota Press, Minneapolis.
- Lyon, D. (ed.) (2003) *Surveillance As Social Sorting*. Routledge, London.
- McKinley, A. and Starkey, K. (eds.) (1998) *Foucault, Management and Organization Theory*. Sage, London.
- Mingers, J. and Willcocks, L. (eds.) (2004). *Social Theory and Philosophy For Information Systems*. Wiley, Chichester.
- Morgan, G. and Willmott, H. (1993). The 'New ' Accounting Research: On Making Accounting More Visible. *Accounting, Audibility and Accountability Journal*, 6, 4, 3-36.
- Munro, I. (2000) Non-Disciplinary Power and The Network Society. *Organization*, 7, 4, 679-695.
- Poster, M. (1984) *Foucault, Marxism and History: Mode of Production versus Mode Of Information*. Polity Press, Cambridge.
- Poster, M. (1990) *The Mode Of Information: Poststructuralism and Social Context*. Polity Press, Cambridge
- Poster, M. (1995) *The Second Media Age*. Polity Press, Cambridge
- Poster, M. (2001) *What's The Matter With The Internet*. University Of Minnesota Press, Minneapolis.
- Quinby, L. (1999). *Millenial Seduction*. Cornell University Press, Ithaca.
- Rabinow, P. (ed.) (1984). *The Foucault Reader*. Penguin, London.
- Robins, K. and Webster, F. (1999) *Times Of The Technoculture: From The Information Society to The Virtual Life*. Routledge, London.

- Sakolosky, R. (1992) Disciplinary Power and The Labour Process. In Sturdy, A, Knights, D. and Willmott, H. (eds.) *Skill and Consent: Contemporary Studies In The Labour Process*. Routledge, London.
- Scott, Morton, M. (ed.) (1991) *The Corporation of the 90s*. Oxford University Press, New York
- Scranton, P. (1995) Determinism and Indeterminacy in The History of Technology. in Smith, M. and Marx, L. (eds.) *Does Technology Drive History*. MIT Press, London.
- Sewell, G. and Wilkinson, B. (1992). 'Someone To Watch Over Me' Surveillance. Discipline and the Just-In-Time labour process. *Sociology*, 26, 2, 271-89.
- Sofoulis, Z. (2002) Cyberquake: Haraway's Manifesto. In Tofts, D., Jonson, A. and Cavallaro, A. (eds.) *Prefiguring Cyberculture: An Intellectual History*. MIT Press, Cambridge, MA
- Townley, B. (1993) Foucault, Power/Knowledge and Its Relevance For Human Resource Management. *Academy Of Management Review*, 18, 3, 518-545.
- Townley, B. (2000) Managing With Modernity. *Organization*, 9, 4, 549-573.
- Virilio, P. (2002) *Ground Zero*. Verso, London.
- Walton, R. (1989) *Up And Running* Harvard Business School Press, Boston.
- Webster, F. (2005) *Theories Of The Information Society*. Second edition. Routledge, London.
- Webster, K. and Robins, K. (1993). 'I'll Be Watching Over You' Comment On Sewell and Wilkinson. *Sociology*, 27, 2, 243-52.
- Winokur, M. (2003) The Ambiguous Panopticon: Foucault and The Codes of Cyberspace. *CTheory*.Net, March, 1-29.
- Zuboff, S. (1988) *In The Age Of The Smart Machine: The Future Of Work and Power*. Basic Books, New York.